

PATENT



Docket No. RSW920000052US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: David A. Selby  
APPLICATION NO. 09/628,400  
FILED: August 1, 2000

Examiner: R. Porter  
Art Unit: 3626

TITLE: METHOD AND SYSTEM FOR PREDICTION OF  
MATERIALIZATION OF A RESERVED PURCHASE

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CERTIFICATE OF MAIL

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Lynn M. White

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Attention: Board of Patent Appeals and Interferences

APPELLANTS' BRIEF

This brief is in furtherance of the Notice of Appeal filed in this case on November 29, 2004. It is resubmitted pursuant to the Notification of Non-Compliant Appeal Brief, dated October 18, 2005. It is submitted that this brief is in compliance with 37 CFR 41.37.

This brief is transmitted in triplicate. The requisite fee (\$500.00) set forth in §1.17(f) is authorized to be charged to Deposit Account No. 09-0457.

**1. REAL PARTY IN INTEREST**

The present application is assigned to International Business Machines Corporation, having its principal place of business at New Orchard Road, Armonk, NY 10504. Accordingly, International Business Machines Corporation is the real party in interest.

**2. RELATED APPEALS AND INTERFERENCES**

The appellant, assignee, and the legal representatives of both are aware of a pending appeal in U.S. Application No. 09/628,398, commonly assigned to the assignee of the present invention, and which may contain similar issues.

**3. STATUS OF CLAIMS**

- A. Claims canceled: None
- B. Claims withdrawn from consideration but not canceled: None
- C. Claims pending: 1-26
- D. Claims allowed: none
- E. Claims rejected: 1-26
- F. Claims appealed: 1-26

Appealed claims 1-26 as currently pending are attached as the Claims Appendix hereto.

#### **4. STATUS OF AMENDMENTS**

A Reply under 37 CFR §1.111 was filed on April 2, 2003, and resulted in a final Office Action dated June 27, 2003. A Reply under 37 CFR §1.116 was filed on September 29, 2003, and a Request for Continued Examination (RCE) was filed on December 23, 2003. A Reply under 37 C.F.R. §1.112 was filed on June 16, 2004, and resulted in the final Office Action appealed herein. A Notice of Appeal was filed on November 29, 2004.

#### **5. SUMMARY OF THE CLAIMED SUBJECT MATTER**

Claim 1: A method, using a processing device, for materialization forecasting with respect to reservations made by persons for the potential purchase of a particular perishable commodity, comprising the steps of: gathering past system-wide reservation information relating to past reservations for perishable commodities that have already perished, said system-wide past reservation information including information unrelated to said particular perishable commodity (*page 15, line 3 to page 17, line 10*); gathering current reservation information relating to current reservations for said particular perishable commodity, which current reservation has not yet perished (*page 17, line 11 to page 18, line 3*); comparing said gathered past system-wide reservation information unrelated to said particular perishable commodity and said current reservation information using said processing device (*page 17, lines 1-10*); calculating, based on said comparison, the likelihood that said current reservations will materialize (*page 17, lines 1-*

10; *page 18, lines 4-10*); and outputting, using said processing device, materialization forecast results based on said calculated likelihood (*page 18, lines 10-13*).

Claim 14: Computer-readable code embodied on computer-readable media for conducting materialization forecasting with respect to reservations made by persons for the potential purchase of a particular perishable commodity, comprising: first subprocesses for gathering past system-wide reservation information relating to past system-wide reservations for perishable commodities that have already perished, said system-wide past reservation information including information unrelated to said particular perishable commodity (*page 15, line 3 to page 17, line 10*); second subprocesses for gathering current reservation information relating to current reservations for said particular perishable commodity, which current reservation has not yet perished (*page 17, line 11 to page 18, line 3*); third subprocesses for comparing said gathered past system-wide reservation information unrelated to said particular perishable commodity and said current reservation information (*page 17, lines 1-10*); fourth subprocesses for calculating, based on said comparison, the likelihood that said current reservations will materialize (*page 17, lines 1-10; page 18, lines 4-10*); and fifth subprocesses for outputting materialization forecast results based on said calculated likelihood (*page 18, lines 10-13*).

The present invention provides a system and method for predicting the likelihood of materialization of pending reservations for the purchase of a particular perishable commodity,

which system and method provides for the gathering and analysis of system-wide reservation information pertaining to perishable commodities for which reservations for purchase have been made in the past, including such information that is unrelated to the particular perishable commodity. Reservation information pertaining to the particular perishable commodity for which reservations for purchase are currently pending is also gathered, and then the likelihood that the particular pending reservation will actually be purchased or "materialize" is determined based on a comparative analysis between the gathered system-wide past reservation information that includes information unrelated to the particular perishable commodity and the reservation information pertaining to the particular perishable commodity.

The term "reservation information" (both past and current) is clearly defined in the specification of the present invention as including commodity details, demographic information, and/or POS information relating to past or current reservations for perishable commodities. The past reservation information is directed to all reservations that have been made, i.e., it is not focused on a specific flight or other specific commodity; instead, it is related to all available commodities, including those unrelated to the currently pending reservation, and one of the novel aspects of the present invention is the determination of likelihood of materialization based on the unrelated reservation information.

The use of system-wide past reservation information unrelated to the current pending reservation is expressly disclosed on pages 16, line 12 through page 17, line 10 of the specification, reprinted as follows:

"Thus, in contrast to the prior art systems, which simply compares the past booking history of, e.g., Flight 250 from Philadelphia to London, the present

invention examines *all* flights which have similar characteristics to those of the current reservation, not just Flight 250. For example, assume that over the past two years the reservations for Flight 250 from Philadelphia to London have a materialization rate of 60%. Assume further that the current reservation request for Flight 250 being processed by current reservation processor 316 is for a non-stop, Philadelphia-to-London flight, pleasure travel, two adults and one child, one month from reservation to travel date, payment made by credit card at time of reservation, reservation made by direct contact between the consumer and the airline. Using the present invention, the data warehouse 300 is searched for *all* previous reservations having the same attributes, and the materialization information for *all* past reservations that have the same attributes is evaluated. Based on this information, if it is determined that reservations of this type have a 98% materialization rate, this factor is applied to the current reservation, using the yield management system 314 in a well-known manner. Using the prior art systems and methods, Flight 250 would be overbooked to 140% capacity to cover the historical tendency of this flight to have only a 60% materialization rate; with the present invention, however, each reservation for the current flight will be weighted based on *its* tendency to materialize, and a much more accurate booking will result."

By gathering and analyzing data relating to the reservations on a global basis in this manner, characteristics of purchasers, commodities, and types of purchases can be analyzed and identified and utilized to characterize reservations generally and the people who made them, rather than specifically characterize one particular commodity (e.g., a particular flight).

**6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Applicant requests the Board to review the following rejections:

1. Rejection of claims 1-26 under 35 U.S.C. §112;
2. Rejection of claims 1-2 and 14-15 under 35 U.S.C. §102 based on U.S. Patent No. 4,775,936 to Jung; and

3. Rejection of claims 3-11 and 16-24 under 35 U.S.C. §103 based on U.S. Patent No. 6,298,348 to Eldering and/or U.S. Patent No. 5,191,523 to Whitesage.

## 7. ARGUMENT

### A. The Claims Meet the Requirements of 35 U.S.C. §112

In rejecting the claims under 35 U.S.C. §112, the Examiner rejects the claims based on her assertion that they contain “negative limitations”. Specifically, the Examiner asserts that the phrase “past reservation information including information unrelated to said particular perishable commodity” is a negative limitation, and then asserts that because of the negative limitation, the claim is indefinite.

Applicant respectfully traverses this rejection. Negative limitations in claims are not, *per se*, improper and do not automatically render claims indefinite. Numerous cases have approved the use of negative limitations, and indeed, the M.P.E.P. has an entire section, §2173.05(i), directed to negative limitations. As set forth in the very first sentence of the above-cited M.P.E.P. section:

“The current view of the courts is that there is nothing inherently ambiguous or uncertain about a negative limitation. So long as the boundaries of the patent protection sought are set forth definitely, albeit negatively, the claim complies with the requirements of 35 U.S.C. §112, second paragraph.” M.P.E.P. §2173.05(i).

In the present application, there are two categories of reservation information of relevance. The first category is current reservation information relating to current reservations

for a particular perishable commodity that has not yet perished. The second category is past system-wide reservation information relating to past reservations for perishable commodities that have already perished. In particular, with respect to the second category, the system-wide past reservation information includes information related to the particular perishable commodity, e.g., reservation information regarding previous instances of the particular flight and flight number, as well as reservation information related to perishable commodities other than that same perishable commodity (e.g., reservation information pertaining to a flight between two different cities, or reservation information pertaining to a flight between the same two cities, but a different flight number).

The phrase "including information unrelated to said particular perishable commodity" was added in response to a rejection made by the patent examiner. While applicant does not think it is a necessary limitation, it is applicant's position that by including this limitation, it makes a clear distinction between reservation information pertaining to, in the airline example, Flight 50 leaving daily between Paris and London, and reservation information for other flights, such as Flight 26 leaving on Sundays between Paris and London. This language provides definiteness to the claims, clearly expressing the differences between the two categories of information. Accordingly, it is submitted that the claims meet the requirements of 35 U.S.C. §112.



**B. The Cited Prior Art Does Not Anticipate the Claimed Invention**

The MPEP and case law provide the following definition of anticipation for the purposes of 35 U.S.C. §102:

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”  
MPEP §2131 citing *Verdegaal Bros. v. Union Oil Company of California*, 814 F.2d 628, 631, 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987)

**The Examiner Has Not Established a *prima facie* Case of Anticipation**

U.S. Patent No. 4,775,936 to Jung (“Jung”) teaches a system which tracks the frequency with which a particular flight experiences overbooking or underbooking, and based on this statistical analysis, increases the point at which that particular flight is considered “closed” to a number greater than 100% of capacity of the aircraft, with the exact percentage greater than 100% being based upon the historical data for that flight. As set forth in the present application, Jung is an example of prior art systems which focus on the history of a particular flight and does not take into consideration the people who made reservations on that flight, characteristics of people who made reservations on that flight, and most particularly, analysis of system-wide data pertaining to people who made reservations for other flights unrelated to that particular flight. Rather, Jung gathers reservation information pertaining to past reservations that are related to the particular flight in question (e.g., earlier occurrences of the same scheduled flight), and uses the related historical information to predict the likelihood of materialization.

The present invention focuses on *reservation information* relating to past and current reservations for perishable commodities. A reservation, by its nature, is a conditional purchase. The person making the reservation does not need to be induced to make the

reservation; by definition, the person making the reservation has already gone beyond that point and has conditionally agreed to make the purchase. Further, *reservation information*, as defined in the specification, is related to all reservations and not simply related to the "traffic information" of Jung, which is limited to information pertaining to a particular flight, e.g., Flight 50 leaving daily from Washington to London. Using the Jung system, only information pertaining to a specific flight is analyzed, and based upon past history of that flight, the decisions are made regarding booking levels.

By contrast, the present invention looks not only to information regarding past history of a particular flight, but also looks at details relating to all flights, for example, each purchaser of tickets for any flight, each person making reservations for any flight, the type of travel being conducted (e.g., business, pleasure, etc.), whether the person making the reservation is a frequent flyer, etc. In other words, in accordance with the present invention, this reservation information that is gathered and analyzed relates to why a particular person made a reservation and kept or dismissed the reservation, regardless of the particular flight on which the reservation was made. By analyzing the reservations in this manner, a user of the present invention can identify the likelihood that certain reservations will be kept or dismissed, and then book flights accordingly.

To provide further clarity, the term "past system-wide reservation information" was explicitly included in the claims in one of the claim amendments. The present invention looks not at the behavior of passengers with respect to a particular flight (in an example where the commodity is airline tickets) but instead looks at the behavior of all passengers, system-wide, with respect to (a) their making a reservation and (b) their actually fulfilling the reservation. The

focus is on system-wide reservations made in the past and the details of the individuals making these reservations, such as their demographic information, the type of travel being conducted, etc.

By contrast, the Jung reference focuses specifically on the actual **flight**. Jung looks at "traffic information" which includes the passenger capacity of the vehicle, the number of passengers scheduled to be transported on the vehicle, the number of passengers actually transported on the vehicle, the number of groups booked on the vehicle, the number of groups actually transported on the vehicle, the number of standby passengers desiring to be transported on the vehicle but not boarded, the number of standby passengers actually transported on the vehicle, the number of "10 minute rule" passengers, the number of passengers who could not be transported because the capacity of the vehicle was exceeded, and the number of passengers that voluntarily agreed not to be transported because the vehicle's capacity was exceeded. The entire focus of Jung is on a particular flight and that flight's past history. Nothing in Jung teaches or suggests the analysis of system-wide past reservation information and then the use of this past system-wide reservation information to project the likelihood that current reservations will actually materialize.

The current claims clearly articulate the differences between the prior art and the claimed invention. The law on anticipation is clear and well established. For a reference to anticipate an invention under 35 U.S.C. §102, each and every element set forth in the claims must be found, either expressly or inherently, in that reference. Stated another way, if there are claimed elements

of an invention that are not found in a prior art reference, then that prior art reference cannot anticipate that claim.

Applicant clearly has improved upon prior art methods of predicting the materialization of reservations for commodities. The Jung system is typical of many materialization systems and focuses only on historical data directly related to the commodity in question, for example, in the case of a particular flight from Washington to Paris, Jung will look at the historical tendencies of previous reservations for the same flight from Washington to Paris and then, based upon the historical results for that particular flight, increase or decrease bookings for a pending occurrence of that particular flight as appropriate. As stated previously, the present invention achieves more accurate results by, instead of focusing on the particular reservation for the particular commodity, focusing on characteristics of purchasers and other reservation attributes that have or have not resulted in materialization, and then analyzing the attributes of the pending reservation to see if these attributes point to a tendency to materialize or not materialize. In other words, in accordance with the present invention, reservation information unrelated to the particular pending reservation is analyzed so that, for example, factors such as the time between the making of a reservation and the materialization of the reservation can be isolated and analyzed, regardless of, in the context of airline flights, which particular flight the prior reservation was for.

The question now remaining is whether or not the currently pending claims clearly recite these novel elements. Applicant submits that the current claims, as amended, do indeed distinguish the differences between the cited prior art and the claimed invention and point out with particularity the fact that the present invention analyzes past reservation information that is

unrelated to the particular reservation that is currently pending. Each of the independent claims recite these novel elements, and thus, all of the pending claims (including those that depend from the independent claims) patentably define over the prior art.

**C. The Cited Art Does Not Render the Claims Obvious**

**The Examiner has not Established a *prima facie* Case of Obviousness**

As set forth in the MPEP:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art, to modify the reference or to combined reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143

U.S. Patent No. 6,298,348 to Eldering ("Eldering") teaches a consumer profiling system in which consumer profiles are formed and updated based upon consumer's purchases. Demographic profiles of a "typical purchaser" of a product are identified and then advertising is tailored to the customer who meets the profile. Thus, Eldering is directed towards inducing a person to make a purchase, rather than identifying characteristics related to an already-made reservation order. The Examiner relies upon Eldering for an asserted teaching of inclusion of point-of-sale and demographic information in profiling consumers.

U.S. Patent No. 5,191,523 to Whitesage ("Whitesage") teaches a method and apparatus forming a system for deriving from computer-based travel reservation systems specific cost and time information, on a per-unit basis, such that accurate cost information may be produced for

comparison purposes. The Examiner relies upon Whitesage for an asserted teaching of the use of POS information including booking carrier, booking recency, and fare code information in a reservation system.

As noted above, every pending claim in the present application requires the gathering and analysis of past system-wide reservation information, a term which is clearly defined in the specification and which is clearly not taught or suggested in Jung. Neither the addition of Eldering nor Whitesage teaches or suggests this feature, and nothing in Jung suggests modifying its disclosure to include features that are taught in Eldering and/or Whitesage. As noted previously, the Examiner relies upon Eldering for an asserted teaching of demographic information and point-of-sale information in a customer profile system used for advertising. Nothing in Eldering teaches or suggests the use of past system-wide reservation information as taught and claimed in the present invention.

Likewise, as noted previously, the Examiner relies on Whitesage for an asserted teaching of the use of POS information including booking carrier, booking recency, and fare code information in a reservation system. Nothing in Whitesage teaches or suggests the use of past system-wide reservation information as defined and claimed in the present invention. Accordingly, the proposed combination of references indicated by the Examiner does not render the remaining claims obvious under 35 U.S.C. §103. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection of claims 3-11, and 16-24 under 35 U.S.C. §103.

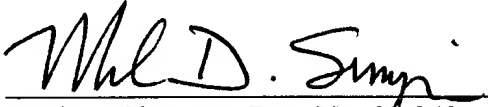
November 18, 2005

**8. CONCLUSION**

For the foregoing reasons applicants respectfully request this Board to overrule the Examiner's rejections and allow claims 1-26.

Respectfully submitted:

Nov. 18, 2005  
Date

  
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## **CLAIMS APPENDIX**

### **CLAIMS INVOLVED IN THIS APPEAL:**

1. (Previously presented) A method, using a processing device, for materialization forecasting with respect to reservations made by persons for the potential purchase of a particular perishable commodity, comprising the steps of:

gathering past system-wide reservation information relating to past reservations for perishable commodities that have already perished, said system-wide past reservation information including information unrelated to said particular perishable commodity;

gathering current reservation information relating to current reservations for said particular perishable commodity, which current reservation has not yet perished;

comparing said gathered past system-wide reservation information unrelated to said particular perishable commodity and said current reservation information using said processing device;

calculating, based on said comparison, the likelihood that said current reservations will materialize; and

outputting, using said processing device, materialization forecast results based on said calculated likelihood.

2. (Previously presented) The method as set forth in claim 1, wherein said past system-wide reservation information includes historical commodity details unrelated to said particular perishable commodity.



3. (Previously presented) The method as set forth in claim 2, wherein said past system-wide reservation information further includes Point-of-Sale (POS) information included in said past system-wide reservation information that is unrelated to said potential purchase of said particular perishable commodity.

4. (Previously presented) The method as set forth in claim 3, wherein said past system-wide reservation information further includes materialization information unrelated to said potential purchase of said particular perishable commodity.

5. (Previously presented) The method as set forth in claim 4, wherein said past system-wide reservation information includes demographic information about persons who made said past reservations.

6. (Original) The method as set forth in claim 5, wherein said demographic information includes one or more of the following pertaining to said persons making said past reservations: age, sex, national origin, citizenship, country of residence, occupation, education, annual income, marital status, reservation frequency.

7. (Previously presented) The method as set forth in claim 6, wherein said current reservation information further includes current-commodity details regarding said particular perishable commodity.

8. (Previously presented) The method as set forth in claim 7, wherein said current reservation information further includes POS information pertaining to said particular perishable commodity.

9. (Previously presented) The method as set forth in claim 8, wherein said current reservation information includes demographic information about persons making said current reservations for said particular perishable commodity.

10. (Original) The method as set forth in claim 9, wherein said demographic information includes one or more of the following pertaining to said persons making said current reservations: age, sex, national origin, citizenship, country of residence, occupation, education, annual income, marital status, reservation frequency.

11. (Previously presented) The method as set forth in claim 10, wherein said perishable commodities comprise airline seats, and wherein said historical commodity details include information related to one or more of the following regarding said airline seats: carrier name, flight origin, flight destination, booking class, flight distance, departure time, connection time, arrival time, departure date, arrival date, flight duration, number of distinct legs comprising a complete one-way itinerary, aircraft type, aircraft capacity.

12. (Original) The method as set forth in claim 11, wherein said POS information includes one or more of the following: POS type, POS country, booking carrier, booking recency, change recency, fare code, number of passengers traveling with said persons making said past reservations, length of stay associated with the reservation, time between booking date and flight date, payment status.

13. (Original) The method as set forth in claim 12, wherein said current-commodity details include information related to one or more of the following: carrier name, flight origin, flight destination, booking class, flight distance, departure time, connection time, arrival time, departure date, arrival date, flight duration, number of distinct legs comprising a complete one-way itinerary, aircraft type, aircraft capacity.

14. (Previously presented) Computer-readable code embodied on computer-readable media for conducting materialization forecasting with respect to reservations made by persons for the potential purchase of a particular perishable commodity, comprising:

first subprocesses for gathering past system-wide reservation information relating to past system-wide reservations for perishable commodities that have already perished, said system-wide past reservation information including information unrelated to said particular perishable commodity;

second subprocesses for gathering current reservation information relating to current reservations for said particular perishable commodity, which current reservation has not yet perished;

third subprocesses for comparing said gathered past system-wide reservation information unrelated to said particular perishable commodity and said current reservation information;

fourth subprocesses for calculating, based on said comparison, the likelihood that said current reservations will materialize; and

fifth subprocesses for outputting materialization forecast results based on said calculated likelihood.

15. (Previously presented) The computer-readable code as set forth in claim 14, wherein said past system-wide reservation information includes historical commodity details unrelated to said particular perishable commodity.

16. (Previously presented) The computer-readable code as set forth in claim 15, wherein said past system-wide reservation information further includes Point-of-Sale (POS) information included in said past system-wide reservation information that is unrelated to said potential purchase of said particular perishable commodity.

17. (Previously presented) The computer-readable code as set forth in claim 16, wherein said past system-wide reservation information further includes materialization information unrelated to said potential purchase of said particular perishable commodity.

18. (Previously presented) The computer-readable code as set forth in claim 17, wherein said past system-wide reservation information includes demographic information about persons who made said past reservations.

19. (Original) The computer-readable code as set forth in claim 18, wherein said demographic information includes one or more of the following pertaining to said persons making said past reservations: age, sex, national origin, citizenship, country of residence, occupation, education, annual income, marital status, reservation frequency.

20. (Previously presented) The computer-readable code as set forth in claim 19, wherein said current reservation information further includes current-commodity details regarding said particular perishable commodity.

21. (Previously presented) The computer-readable code as set forth in claim 20, wherein said current reservation information further includes POS information pertaining to said particular perishable commodity.

22. (Previously presented) The computer-readable code as set forth in claim 21, wherein said current reservation information includes demographic information about persons making said current reservations for said particular perishable commodity.

23. (Original) The computer-readable code as set forth in claim 22, wherein said demographic information includes one or more of the following pertaining to said persons making said current reservations: age, sex, national origin, citizenship, country of residence, occupation, education, annual income, marital status, reservation frequency.

24. (Previously presented) The computer-readable code as set forth in claim 23, wherein said perishable commodities comprise airline seats, and wherein said historical commodity details include information related to one or more of the following regarding said airline seats: carrier name, flight origin, flight destination, booking class, flight distance, departure time, connection time, arrival time, departure date, arrival date, flight duration, number of distinct legs comprising a complete one-way itinerary, aircraft type, aircraft capacity.

25. (Original) The computer-readable code as set forth in claim 24, wherein said POS information includes one or more of the following: POS type, POS country, booking carrier, booking recency, change recency, fare code, number of passengers traveling with said persons making said past reservations, length of stay associated with the reservation, time between booking date and flight date, payment status.

26. (Original) The computer-readable code as set forth in claim 25, wherein said current-commodity details include information related to one or more of the following: carrier name, flight origin, flight destination, booking class, flight distance, departure time, connection time, arrival time, departure date, arrival date, flight duration, number of distinct legs comprising a complete one-way itinerary, aircraft type, aircraft capacity.

**EVIDENCE APPENDIX**

No additional evidence presented.



**RELATED PROCEEDINGS APPENDIX**

No decision presently rendered.